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# UDI
# Doc#
# DICOM Conformance Statement

# Overview

This document describes the DICOM v3.0 implementation supported by UDI 1.0. It documents conformance aspects required to interoperate with other DICOM v3.0 conformant devices.

The UDI implements the necessary DICOM services to download work lists from an information system, to send MPPS messages to a network MPPS server, to save/commit acquired DX images to a network storage device, to print acquired images to DICOM printers, and to write to DICOM removable media.

Table 1 lists the supported Networking DICOM Service (SOP) classes.

| SOP Classes | User of Service (SCU) | Provider of Service (SCP) |
|---|---|---|
| **Transfer** | | |
| **Digital X-Ray Image Storage-For Presentation 1.2.840.10008.5.1.4.1.1.1.1** | **YES** | **NO** |
| **Digital X-Ray Image Storage – For Processing 1.2.840.10008.5.1.4.1.1.1.1.1** | **YES** | **NO** |
| **Grayscale Softcopy Presentation State Storage 1.2.840.10008.5.1.4.1.1.11.1** | **YES** | **NO** |
| **Workflow Management** | | |
| **Storage Commitment Push Model 1.2.840.10008.1.20.1** | **YES** | **NO** |
| **Modality Worklist Information Model – FIND 1.2.840.10008.5.1.4.31** | **YES** | **NO** |
| **Modality Performed Procedure Step 1.2.840.10008.3.1.2.3.3** | **YES** | **NO** |
| **Print Management** | | |
| **Print** | **YES** | **NO** |

**Table 1. Network Services**

Table 2 lists the Supported Media Storage Application Profiles.

| **Media Storage Application Profile** | | **Write Files (FSC or FSU)** | **Read Files (FSR)** |
|---|---|---|---|
| **General Purpose CD-R** | **CD-R** | **FSC** | **NO** |
| | **CD-RW** | | |
| **General Purpose DVD** | **DVD+/-R** | **FSC** | **NO** |
| | **DVD+/-RW** | | |

**Table 2. Media Storage Application Profiles**

# 1. Introduction

The UDI integrates with X-Ray generator and detector to acquire DX images. The console should be connected to the X-Ray generator and detector for acquisition. The console should be connected to the information network for Modality Worklist, DX Image Storage and/or Storage Commitment, Modality Performed Procedure Step, and Print. In addition, the console should be configured with a local removable storage device for media archiving.

The use of this conformance statement by itself does not guarantee successful interoperability of the product with equipment from other vendors. The user or integrator of the UDI system should keep the following issues in mind:

- Successful interoperability of the UDI system with other devices may require functions which are not specified within the scope of DICOM. It is the user's or integrator's responsibility to ensure that the proper analysis and validation is performed to verify the connection.
- Test procedures should be used to verify that data transferred into/from the software is correct. This is often done with the aid of phantom scans using a variety of clinical protocols.
- Test procedures should be used to verify connectivity. Issues such as power failure and broken connections should be verified.
- The DICOM standard will continually evolve to meet new user requirements. Meridian Medical Systems will follow the changes in the standard by implementing new features as specified by the standard. The user or integrator should ensure that any non-Meridian OEM device providers, which connect with Meridian devices, should also follow the standard. Failure to do so will likely result in future connectivity problems.

## 1.1 Revision History

| Version | Type | Date | Description |
|---|---|---|---|
| 1.0 | Major | Sept. 15, 2010 | Initial Version |

## 1.2 Audience

This document is written for the people that need to understand how the UDI will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who need to have a detailed understanding of the DICOM features of the product. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

## 1.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between UDI and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and the other DICOM conformant equipment.

- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

## 1.4 Terms and Definitions

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative

source for formal definitions of these terms.

**Abstract Syntax** – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

**Application Entity (AE)** – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

**Application Entity Title** – the externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network.

**Application Context** – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

**Association** – a network communication channel set up between *Application Entities*.

**Attribute** – a unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number(0008,0050), Photometric Interpretation(0028,0004), Procedure Code Sequence(0008,1032).

**Information Object Definition (IOD)** – the specified set of *Attributes* that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The *Attributes* may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: MR Image IOD, CT Image IOD, Print Job IOD.

**Joint Photographic Experts Group (JPEG)** – a set of standardized image compression techniques, available for use by DICOM applications.

**Media Application Profile** – the specification of DIOCM information objects and encoding exchanged on removable media (e.g., CDs)

**Module** – a set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

**Negotiation** – first phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.

**Presentation Context** - the set of DICOM network services used over an *Association*, as negotiated between *Application Entities;* includes *Abstract Syntaxes* and *Transfer Syntaxes*.

**Protocol Data Unit** – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.

**Security Profile** – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data.

**Service Class Provider (SCP)** – role of an *Application Entity* that provides a DICOM network service; typically, a server that performs operations requested by another *Application Entity* (*Service Class User*). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality Worklist SCP).

**Service Class User (SCU)** – role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples; imaging modality (image storage SCU, and modality Worklist SCU), imaging workstation (image query/retrieve SCU)

**Service/Object Pair (SOP) Class** – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service; Basic Grayscale Print

Management.

**Service/Object Pair (SOP) Instance** – an information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.

**Tag** – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]

**Transfer Syntax** – A set of encoding rules that allow Application Entities to unambiguously negotiate the encoding techniques (e.g., Data Element structure, byte ordering, compression) they are able to support, thereby allowing these Application Entities to communicate. Examples: JPEG Baseline, Explicit VR Little Endian.

**Unique Identifier (UID)** – a globally unique “dotted decimal” string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

**Value Representation (VR)** – the format type of an individual DICOM data element, such as text, an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

## 1.5 Basics of DICOM Communication

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in *italics* below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two *Application Entities* (devices) that want to communicate with each

other over a network using DICOM protocol must first agree on several things during an initial network “handshake”. One of the two devices must initiate an *Association* (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (*Negotiation*).

DICOM specifies a number of network services and types of information objects, each of which is called an *Abstract Syntax* for the Negotiation. DICOM also specifies a variety of methods for encoding data, denoted *Transfer Syntaxes*. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called *Presentation Contexts*. The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on *Roles* – which one is the *Service Class User* (SCU – client) and which is the *Service Class Provider* (SCP – server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The Association Negotiation finally enables exchange of maximum network packet (*PDU*) size, security information, and network service options (called *Extended Negotiation* information). The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structure reports), and sending images to film printers. Each exchangeable unit of data if formatted by the sender in accordance with the appropriate *Information Object Definition*, and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use case. Each transfer is explicitly acknowledged by the receiver with a *Response Status* indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no Association Negotiation possible, they both use a *Media Application Profile* that specifies “pre-negotiated” exchange media format, Abstract Syntax,

and Transfer Syntax.

## 1.6 Abbreviations

| | |
|---|---|
| **AE** | **Application Entity** |
| **AET** | **Application Entity Title** |
| **DHCP** | **Dynamic Host Configuration Protocol** |
| **DICOM** | **Digital Imaging and Communication in Medicine** |
| **DNS** | **Domain Name System** |
| **DX** | **Digital X-ray** |
| **FSC** | **File-Set Creator** |
| **HIS** | **Hospital Information System** |
| **IOD** | **Information Object Definition** |
| **IPv4** | **Internet Protocol version 4** |
| **IPv6** | **Internet Protocol version 6** |
| **ISO** | **International Organization for Standards** |
| **JPEG** | **Joint Photographic Experts Group** |
| **MPPS** | **Modality Performed Procedure Step** |
| **MSPS** | **Modality Scheduled Procedure Step** |
| **MTU** | **Maximum Transfer Unit** |
| **MWL** | **Modality Worklist** |
| **NTP** | **Network Time Protocol** |
| **O** | **Optional (Key Attribute)** |
| **OSI** | **Open Systems Interconnection** |
| **PACS** | **Picture Archiving and Communication System** |
| **PDU** | **Protocol Data Unit** |
| **R** | **Required (Key Attribute)** |
| **RIS** | **Radiology Information System** |
| **SC** | **Secondary Capture** |
| **SCP** | **Service Class Provider** |
| **SCU** | **Service Class User** |
| **SOP** | **Service-Object Pair** |
| **SPS** | **Scheduled Procedure Step** |
| **SR** | **Structured Report** |
| **TCP/IP** | **Transmission Control Protocol/Internet Protocol** |
| **U** | **Unique (Key Attribute)** |
| **UL** | **Upper Layer** |
| **VR** | **Value Representation** |

## 1.7 References

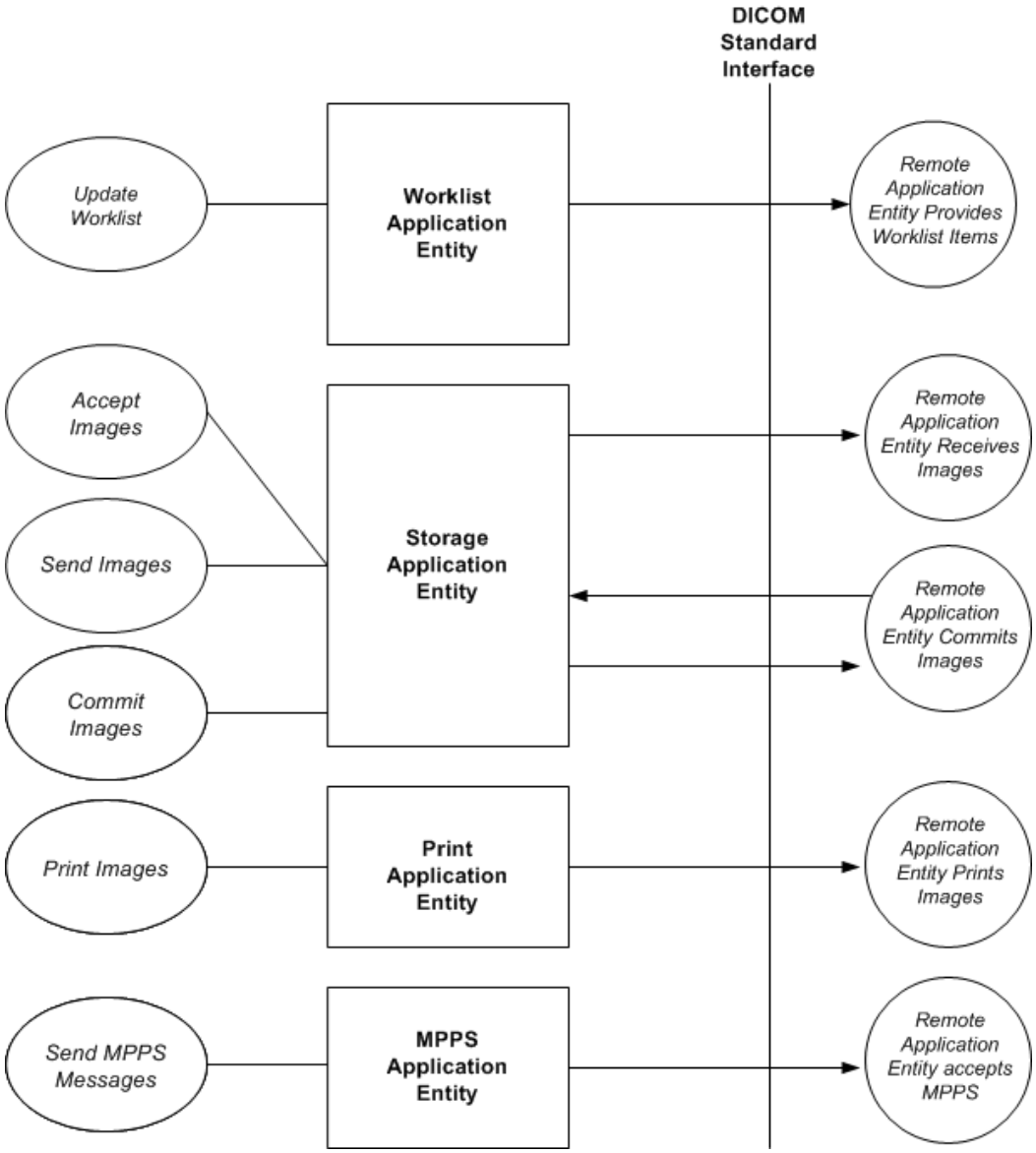
**NEMA PS3 2008** – Digital Imaging and Communication in Medicine (DICOM) standard, available free at http://medical.nema.org/

# 2. Networking

This section describes the networking related services of the UDI system.

## 2.1 Implementation Model

### 2.1.1 Application Data Flow




The Worklist AE receives Worklist information from a remote AE. It is associated with the “Update Worklist” local real-world activity. When the “Update Worklist” local real-world activity is performed, the Worklist AE queries a remote AE for worklist items and provides the set of worklist items matching the query request. “Update Worklist” is performed as a result of an operator request or can be performed automatically at specific time intervals.

The Storage AE sends images to a remote AE. The remote AE could be an archive device, or a PACS network. The Storage AE is associated with the local real-world activities “Accept Images” and “Send Images”. On the “Accept Images” real-world activity, the Storage AE sends images immediately to a network storage device or PACS. “Send Images” is activated by user settings (auto-send) and when performed, the Storage AE sends images to all remote AEs. The Storage AE requests Storage Commitment if a remote AE is configured as a storage commitment device. Only one storage commitment device may be active at a time. The Storage AE is associated with the local real-world activity “Commit Images” which is activated by user settings (auto-commit).

The Print AE sends images to a remote AE which is associated with a DICOM printer. The Print AE is associated with the local real-world activity “Print Images”. “Print Images” is triggered by user settings (auto-print) or by user selection in user interface. Once performed, the Print AE sends all selected images to remote DICOM printer with selected printing options.

The MPPS AE sends messages to a remote AE which is a Modality Performed Procedure Step SCP. The MPPS AE is associated with the local real-world activity “Send MPPS Messages”. “Send MPPS Messages” is activated by user settings (auto-send MPPS messages) upon finishing an acquisition session. When performed, the MPPS AE sends N-CREATE and N-SET messages to the remote MPPS SCP.

### 2.1.2 Functional definition of AEs

#### 2.1.2.1 Functional Definition of Worklist AE

Worklist Update attempts to download a Worklist from a remote node. If the Worklist AE establishes an Association to a remote AE, it will transfer all worklist items via the open Association. The results will be displayed in a list to the user.

#### 2.1.2.2 Functional Definition of Storage AE

When an image is acquired and accepted by the user, the

application stores the image in its local database and then initiates an archive-queue entry in the local database with the associated network destination. The existence of the archive-queue entry activates the Storage AE. An association request is sent to the destination AE and upon successful negotiation, the image transfer is started. If the association cannot be opened, the related archive-queue entry will be scheduled for the next retry (automatic). If the destination AE is configured as a storage commitment device, and the Storage AE has transferred the image to the destination, a commitment confirmation is requested. If a commitment is successfully confirmed, the Storage AE will record this information in the local database.

#### 2.1.2.3 Functional Definition of Print AE

When an image is acquired and accepted by the user, the application initiates (auto-print is configured) a print request to the remote DICOM printer. The print operation can also be requested by manual print UI button. An association request is sent to the remote DICOM printer AE. Upon successful negotiation, the image is sent to the printer.

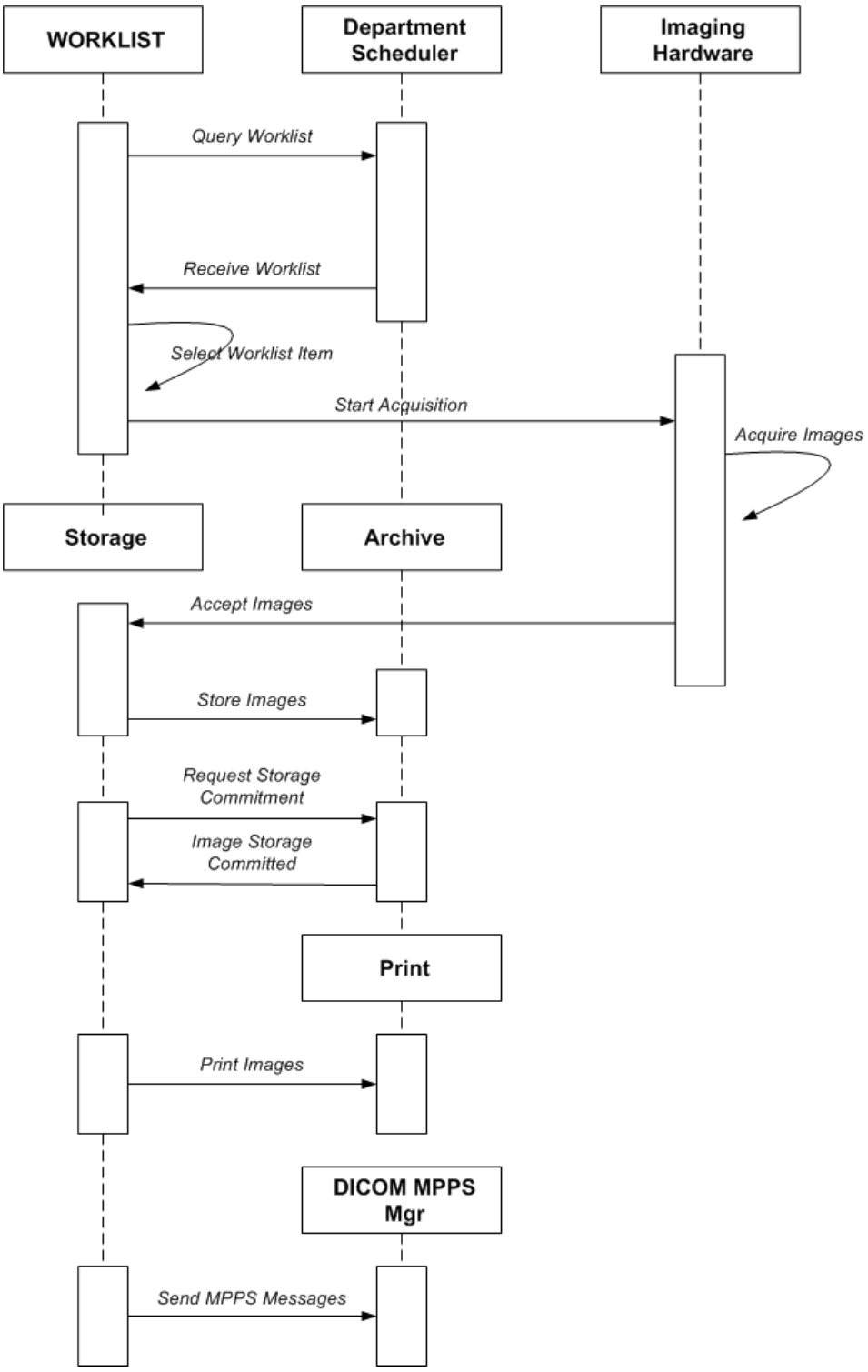
#### 2.1.2.4 Functional Definition of MPPS AE

The UDI MPPS AE is used to transmit performed procedure step events, which are the N-CREATE and N-SET, to a remote DICOM device. It therefore performs the following tasks:

- Establishes a DICOM Association with a remote DICOM device.
- Sends DICOM MPPS Information to a remote DICOM device.

### 2.1.3 Sequencing of Real World Activities

The Real World Activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity is completed. The following diagram shows a typical acquisition workflow:


WORKLIST
Department Scheduler
Imaging Hardware
Query Worklist
Receive Worklist
Select Worklist Item
Start Acquisition
Acquire Images
Storage
Archive
Accept Images
Store Images
Request Storage Commitment
Image Storage Committed
Print
Print Images
DICOM MPPS Mgr
Send MPPS Messages

## 2.2 AE Specification

### 2.2.1 Worklist AE Specification

#### 2.2.1.1 SOP Classes

The Worklist AE provides Standard Conformance to the following SOP Classes:

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| **Modality Worklist Information Model-FIND** | **1.2.840.10008.5.1.4.31** | **Yes** | **No** |

#### 2.2.1.2 Association Establishment Policies

##### 2.2.1.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

| | |
|---|---|
| **Application Context Name** | **1.2.840.10008.3.1.1.1** |

##### 2.2.1.2.2 Number of Associations

The maximum number of simultaneous Associations is 1.

##### 2.2.1.2.3 Asynchronous Nature

The Worklist AE does not support asynchronous operations and will not perform asynchronous window negotiation.

##### 2.2.1.2.4 Implementation Identifying Information

The application uses the following implementation identifying information:

- Implementation Class UID: **2.16.124.113531.9**

- Implementation Version Name: **OE ver 1.0**

#### 2.2.1.3 Association Initiation Policy

This section describes the conditions under which the Worklist AE will initiate an association.

##### 2.2.1.3.1 Activity – Worklist Update

A Worklist Update occurs on user interaction (pressing the “Search” button on the Worklist control) or automatically at specific time intervals configurable by the user. To specify query parameters, the user types search criteria in the column headers of the worklist.

###### 2.2.1.3.1.1 Description and Sequencing of Activities

Upon initiation of the request, the Worklist AE will build an Identifier for the C-FIND request, which will initiate an Association to send the request and will wait for Worklist responses. After retrieval of all responses, the Worklist AE will update the Worklist control with the list of responses.

###### 2.2.1.3.1.2 Proposed Presentation Contexts

The Worklist AE will propose Presentation Contexts as shown in the following table.

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| **Abstract Syntax** | | **Transfer Syntax** | | **Role** | **Extended Negotiation** |
| **Name** | **UID** | **Name List** | **UID List** | | |
| Modality Worklist Information Model – FIND | 1.2.840.10008.5.1.4.31 | Implicit Little Endian | 1.2.840.10008.1.2 | SCU | None |

###### 2.2.1.3.1.3 SOP Specific Conformance for Modality Worklist

The behavior of Worklist AE when encountering status codes in a Modality Worklist C-FIND response is summarized in the table below. If any other SCP response status that “Success” or “Pending” is received by Worklist AE, a

message will appear on the user interface and the user interface will fall back to locally saved worklist items for display.

**Modality Worklist C-FIND Response Status Handling Behavior**

| Service Status | Further Meaning | Error Code | Behavior |
|---|---|---|---|
| Success | Matching is complete | 0000 | The SCP has completed the matches. Worklist items are available for display |
| Refused | Out of Resources | A700 | The Association is aborted using A-ABORT and the worklist query is marked as failed. Error information is logged. |
| Failed | Identifier does not match SOP Class | A900 | The Association is aborted using A-ABORT and the worklist query is marked as failed. Error information is logged. |
| Failed | Unable to Process | C000-CFFF | The Association is aborted using A-ABORT and the worklist query is marked as failed. Error information is logged. |
| Cancel | Matching terminated due to Cancel request | FE00 | If the query was cancelled due to too many worklist items then the SCP has completed the matches. Worklist items are available for display. Otherwise, the Association is aborted using A-ABORT and the worklist query is marked as failed. Error information is logged. |
| Pending | Matches are continuing | FF00 | The worklist item contained in the Identifier is collected for later display. |
| Pending | Matches are continuing – Warning that one or more Optional Keys were not supported | FF01 | The worklist item contained in the Identifier is collected for later display. Errors are logged only once for each C-FIND operation |
| * | * | Any other status code | The Association is aborted using A-ABORT and the worklist is marked as failed. Error information is logged. |

The behavior of Worklist AE during communication failure is summarized in the table below.

| Exception | Behavior |
|---|---|
| Timeout | The Association is aborted using A-ABORT and the worklist query marked as failed. The reason is logged. |
| Association aborted by the SCP or network layers | The worklist query is marked as failed. The reason is logged. |

Acquired images will always use the Study Instance UID specified for the Scheduled Procedure Step (if available). If an acquisition is unscheduled, a Study Instance UID will be generated locally.

The table below provides a description of the Worklist AE Worklist Request Identifier and specifies the attributes that are copied into the images. Unexpected attributes returned in a C-FIND response are ignored.

Requested return attributes not supported by the SCP are set to have no value. Non-matching responses returned by the SCP due to unsupported option matching keys are ignored. No attempt is made to filter out possible duplicate entries.

**Worklist Request Identifier**

| Module Name<br><br>Attribute Name | Tag | VR | M | R | Q | D | IOD |
|---|---|---|---|---|---|---|---|
| **SOP Common** | | | | | | | |
| Specific Character Set | (0008,0005) | CS | | X | | | |
| **Scheduled Procedure Step** | | | | | | | |
| Scheduled Procedure Step Sequence | (0040,0100) | SQ | | X | X | | |
| >Scheduled Station AET | (0040,0001) | AE | S | | | | |
| >Scheduled Procedure Step Start Date | (0040,0002) | DA | S | | | | |
| >Scheduled Procedure Step Start Time | (0040,0003) | TM | | X | | | |
| >Modality | (0008,0060) | CS | S | X | | | X |
| >Scheduled Performing Physician's Name | (0040,0006) | PN | | X | | | |
| >Scheduled Procedure Step Description | (0040,0007) | LO | | X | | | X |
| >Scheduled Station Name | (0040,0010) | SH | (S) | X | | | |
| >Scheduled Procedure Step ID | (0040,0009) | SH | | X | | | X |
| **Requested Procedure** | | | | | | | |
| Referenced Study Sequence | (0008,1110) | SQ | | X | | | X |
| Requested Procedure Description | (0032,1060) | LO | | X | | | X |
| Study Instance UID | (0020,000D) | UI | | X | | | X |
| Requested Procedure Code Sequence | (0032,1064) | SQ | | X | | | |
| **Imaging Service Request** | | | | | | | |
| Accession Number | (0008,0050) | SH | | X | X | X | X |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Referring Physician's Name | (0008,0090) | PN | | X | X | | |
| Requesting Physician | (0032,1032) | PN | | X | X | | X |
| Placer Order Number/Imaging Service Request | (0040,2016) | LO | | X | | | X |
| Filler Order Number/Imaging Service Request | (0040,2017) | LO | | X | | | X |
| **Patient Identification** | | | | | | | |
| Patient Name | (0010,0010) | PN | | X | X | X | X |
| Patient ID | (0010,0020) | LO | | X | X | X | X |
| **Patient Demographic** | | | | | | | |
| Patient's Birth Date | (0010,0030) | DA | | X | X | X | X |
| Patient's Sex | (0010,0040) | CS | | X | X | X | X |
| Patient's Weight | (0010,1030) | DS | | X | | | X |
| Patient Comments | (0010,4000) | LT | | X | | | X |

The above table should be read as follows:

Module Name: The name of the associated module for supported worklist attributes.
Attribute Name: Attributes supported to build a Worklist AE Worklist Request Identifier
Tag: DICOM tag for this attribute
VR: DICOM VR for this attribute
M: Matching keys for Worklist update. A "S" will indicate that Worklist AE will supply an attribute value for Single Value Matching.
R: Return keys. An "X" will indicate that Worklist AE will supply this attribute as Return Key with zero length for Universal Matching.
Q: Interactive Query Key. An "X" will indicate that Worklist AE will supply this attribute as matching key, if entered in the Worklist user interface.
D: Displayed keys. An "X" indicates that this worklist attribute is displayed to the user during patient registration dialog.
IOD: An "X" indicates that this Worklist attribute is included into all Object Instances created during performance of the related Procedure Step.

#### 2.2.1.4 Association Acceptance Policy

The Worklist AE does not accept Associations

### 2.2.2 Storage AE Specification

#### 2.2.2.1 SOP Classes

The Storage AE provides Standard Conformance to the following SOP Classes:

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Digital X-Ray Image Storage – For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | YES | NO |
| Digital X-ray Image Storage – For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | YES | NO |
| Grayscale Softcopy Presentation State Storage | 1.2.840.1008.5.1.4.1.1.11.1 | YES | NO |
| Storage Commitment Push Model | 1.2.840.10008.1.20.1 | YES | NO |

#### 2.2.2.2 Association Establishment Policies

##### 2.2.2.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

| Application Context Name | 1.2.840.10008.3.1.1.1 |
|---|---|

##### 2.2.2.2.2 Number of Associations

The number of simultaneous associations is not limited by the application. As an association initiator the AE creates at most one association per destination at a given time.

##### 2.2.2.2.3 Asynchronous Nature

The Storage AE does not support asynchronous operations and will not perform asynchronous window negotiation.

##### 2.2.2.2.4 Implementation Identifying Information

The application uses the following implementation identifying information:

- Implementation Class UID: **2.16.124.113531.9**
- Implementation Version Name: **OE ver 1.0**

#### 2.2.2.3 Association Initiation Policy

This section describes the conditions under which the Storage AE will initiate an association.

##### 2.2.2.3.1 Activities – Accept Images and Send Images (Auto-Send)

Accept Images occurs when acquisition of image is done. When Accept Images is performed, the Storage AE immediately initiates an Association to the Storage SCP and transfers the images upon successful Association.

The Storage AE may be configured to send output images from application database to destination Storage SCPs at regular intervals. When the Send Images (auto-send) activity is performed, the Storage AE initiates an Association to the archive and transfers the images to the archive upon success. If the association or transfer is not successful, the images are scheduled for transfer at the next auto-send time interval.

###### 2.2.2.3.1.1 Description and Sequencing of Activities

The Storage AE will initiate an association to an archive as a Storae SCU and send the images using C-STORE operation. The association is released after all images have been transferred.

###### 2.2.2.3.1.2 Proposed Presentation Contexts

The Storage AE will propose Presentation Contexts as shown in the following table:

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| DX Image Storage-For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit Little Endian | 1.2.840.10008.1.2 | SCU | None |
| DX Image Storage-For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Implicit Little Endian | 1.2.840.10008.1.2 | SCU | None |
| Grayscale Softcopy Presentation | 1.2.840.10008.5.1.4.1.1.11.1 | Implicit Little Endian | 1.2.840.10008.1.2 | SCU | None |

| | | | | | |
|---|---|---|---|---|---|
| State Storage | | | | | |

#### 2.2.2.3.1.3 SOP Specific Conformance for DX Image Storage

If DX Image Storage SOP Instances are included in the Send Job and a corresponding Presentation Context is not accepted then the Association is aborted using A-ABORT and the send job is marked as failed. The job failure is logged and reported to the user via the Archive Status dialog.

The behavior of Storage AE when encountering status codes in a C-STORE response is summarized in the Table below:

| Service Status | Further Meaning | Error Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The SCP has successfully stored the SOP Instance. If all SOP Instances in a send job have status success then the job is marked as complete. |
| Refused | Out of Resources | A700-A7FF | The Association is aborted using A-ABORT and the send job is marked as failed. Error information is logged and the error is reported to the user via the Archive Status UI. |
| Error | Data Set does not match SOP Class | A900-A9FF | The Association is aborted using A-ABORT and the send job is marked as failed. Error information is logged and the error is reported to the user via the Archive Status UI. |
| Error | Cannot Understand | C000-CFFF | The Association is aborted using A-ABORT and the send job is marked as failed. Error information is logged and the error is reported to the user via the Archive Status UI. |
| Warning | Coercion of Data Elements | B000 | Image transmission is considered successful. |
| Warning | Data Set does not match SOP Class | B007 | Image transmission is considered successful. |
| Warning | Elements Discarded | B006 | Image transmission is considered successful. |

| | | | |
|---|---|---|---|
| * | * | Any other status code | The Association is aborted using A-ABORT and the send job is marked as failed. Error information is logged and the error is reported to the user via the Archive Status UI. |

The behavior of Storage AE during communication failure is summarized in the able below:

**Storage Communication Failure Behavior**

| Exception | Behavior |
|---|---|
| Timeout | The Association is aborted using A-ABORT and the send job is marked as failed. Error information is logged and the error is reported to the user via the Archive Status UI. |
| Association aborted by the SCP or network layers | The send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application |

#### 2.2.2.3.2 Activity – Storage Commitment

##### 2.2.2.3.2.1 Description And Sequencing of Activities

Whenever a DX image is successfully sent to the archive the Storage AE automatically initiates a new association with the archive as a Storage Commitment SCU and sends an N-ACTION command to request storage commitment for the DX image. Upon receiving the N-ACTION response, the Storage AE releases the association. The Storage AE always listens for connections from the archive on a pre-configured port for storage commitment responses. When the archive completes the storage commitment of one or more images it will connect to the Storage AE, request an association and send the appropriate storage commitment result notifications. The Storage AE will store the result of the storage commitment operation for each image.

The storage commitment functionality of the Storage AE can be turned off through configuration.

##### 2.2.2.3.2.2 Proposed Presentation Contexts

The Storage AE will propose Presentation Contexts as shown in the following table:

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Storage Commitment Push Model | 1.2.840.10008.1.20.1 | Implicit Little Endian | 1.2.840.10008.1.2 | SCU | None |

#### 2.2.2.3.2.3 SOP Specific Conformance for Storage Commitment Push SOP Class

If the association with the archive fails the Storage AE logs an error message describing the error and will not retry.

If an N-ACTION response has a status that is not Success the Storage AE will log an error message, close the association and will not attempt to commit the image again. The Storage AE will continue to send storage commitment requests for subsequent DX images.

The Storage AE supports an “Association Timer” for each association request. This timer starts when the association request is sent and stops when the association response is received or an error occurs. If a timeout occurs the connection is closed and the association is marked as failed. The Association Timer value is not configurable and it has a default value of 30 seconds.

### 2.2.2.4 Association Acceptance Policy

The Storage AE will accept associations in order to receive responses to a Storage Commitment Request.

## 2.2.3 Print AE Specifications

The UDI Print AE provides the UDI application with print capabilities. UDI Print AE acts independently of other DICOM applications that my be running on the same system. It support printing to multiple DICOM hardcopy devices at the same time, each hardcopy device being uniquely identified by an Application Entity Title.

### 2.2.3.1 SOP Classes

The UDI provides standard conformance to the following DICOM SOP Classes as an SCU:

| SOP Class Name | SOP Class UID |
|---|---|
| **Basic Grayscale Print Management Meta** | **1.2.840.10008.5.1.1.9** |

#### 2.2.3.2 Association Establishment Policies

##### 2.2.3.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

| | |
|---|---|
| **Application Context Name** | **1.2.840.10008.3.1.1.1** |

##### 2.2.3.2.2 Number of Associations

The UDI Print AE is capable of initiating multiple associations concurrently. There is no real limit on the number of associations that can be originated. There will be one association opened for each configured SCP.

##### 2.2.3.2.3 Asynchronous Nature

The Print AE does not support asynchronous operations and will not perform asynchronous window negotiation.

##### 2.2.3.2.4 Implementation Identifying Information

The application uses the following implementation identifying information:

- Implementation Class UID: **2.16.124.113531.1.1.1**
- Implementation Version Name: **ISG_HCS_V1.0.96**

#### 2.2.3.3 Association Initiation Policy

This section describes the conditions under which the Print AE will initiate an association.

##### 2.2.3.3.1 Activities – Print Images

#### 2.2.3.3.1.1 Description and Sequencing of Activities

The user of the UDI Application selects the “Print” operation on the user interface. The UDI maintains a list of valid hardcopy devices and can present that list to the users upon request. When a user submits a print job designated for a listed hardcopy device the UDI Print AE will request an association with the selected hardcopy device.

#### 2.2.3.3.1.2 Proposed Presentation Contexts

The Print AE will propose Presentation Contexts as shown in the following table:

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Basic Grayscale Print Management | 1.2.840.10008.5.1.1.9 | Implicit Little Endian | 1.2.840.10008.1.2 | SCU | None |

##### 2.2.3.3.1.2.1 SOP Specific Conformance to Basic Grayscale Print Management Meta SOP Class

The UDI Print AE supports the following mandatory SOP classes, which are defined under the Basic Grayscale Print Management Meta SOP Class:

| SOP Class Name | SOP Class UID |
|---|---|
| **Basic Film Session** | **1.2.840.10008.5.1.1.1** |
| **Basic Film Box** | **1.2.840.10008.5.1.1.2** |
| **Basic Grayscale Image Box** | **1.2.840.10008.5.1.1.4** |
| **Printer** | **1.2.840.10008.5.1.1.16** |

The UDI Print AE supports the following SOP class attributes and DIMSE services for the Basic Grayscale Print Management Meta SOP Class.

| SOP Class | DIMSE Service | Optional Attribute | Tag |
|---|---|---|---|
| Basic Film Session SOP Class | N-CREATE | Number of Copies | (2000,0010) |
| | | Print Priority | (2000,0020) |
| | | Medium Type | (2000,0030) |
| | | Film Destination | (2000,0040) |
| | | Film Session Label | (2000,0050) |

| | | | |
|---|---|---|---|
| | | Memory Allocation | (2000,0060) |
| Basic Film Box SOP Class | N-CREATE | Film Orientation | (2010,0040) |
| | | Film Size ID | (2010,0050) |
| | | Magnification Type | (2010,0060) |
| | | Max Density | (2010,0130) |
| | | Configuration Information | (2010,0150) |
| | | Smoothing Type | (2010,0080) |
| | | Border Density | (2010,0100) |
| | | Empty Image Density | (2010,0110) |
| | | Min Density | (2010,0120) |
| | | Trim | (2010,0140) |
| | N-DELETE | | |
| Basic Grayscale Image Box SOP Class | N-SET | Polarity | (2020,0020) |
| | | Magnification Type | (2010,0060) |
| | | Smoothing Type | (2010,0080) |
| | | Requested Image Size | (2020,0030) |
| Printer SOP Class | N-GET | | |

#### 2.2.3.3.1.2.1.1 Basic Film Session SOP Class Attributes

The UDI Print AE supports the following mandatory and optional attribute values in the SOP class:

| Attribute Name | Tag | Supported Values |
|---|---|---|
| Number of Copies | (2000,0010) | Integer String |
| Print Priority | (2000,0020) | HIGH,MED,LOW |
| Medium Type | (2000,0030) | PAPER,CLEAR FILM, BLUE FILM |
| Film Destination | (2000,0040) | MAGAZINE, PROCESSOR |
| Film Session Label | (2000,0050) | Long string |
| Memory Allocation | (2000,0060) | Integer string |

#### 2.2.3.3.1.2.1.2 Basic Film Box SOP Class Attributes

The UDI Print AE supports the following mandatory and optional attribute values in this SOP class:

| Attribute Name | Tag | Supported Values |
|---|---|---|
| Image Display Format | (2010,0010) | STANDARD,ROW,COL,SLIDE, SUPERSLIDE,CUSTOM |
| Film Orientation | (2010,0040) | PORTRAID,LANDSCAPE |
| Film Size ID | (2010,0050) | 8INX10IN, 10INX14IN, 14INX14IN, 24CMX24CM, 10INX12IN, 11INX14IN, 14INX17IN, 24CMX30CM |

| | | |
|---|---|---|
| Magnification Type | (2010,0060) | REPLICATE,BILINEAR,CUBIC,NONE |
| Smoothing Type | (2010,0080) | SCP specific |
| Border Density | (2010,0100) | BLACK, WHITE, I where I represents the desired density in hundredths of OD |
| Empty Image Density | (2010,0110) | BLACK,WHITE, I where I represents the desired density in hundredths of OD |
| Min Density | (2010,0120) | Unsigned short |
| Max Density | (2010,0130) | Unsigned short |
| Trim | (2010,0140) | YES, NO |
| Configuration Information | (2010,0150) | SCP specific |

#### 2.2.3.3.1.2.1.3 Basic Grayscale Image Box SOP Class Attributes

The UDI Print AE supports the following mandatory and optional attribute values in this SOP class:

| Attribute Name | Tag | Supported Values |
|---|---|---|
| Image Position | (2020,0010) | Unsigned short |
| Polarity | (2020,0020) | NORMAL, REVERSE |
| Magnification Type | (2020,0060) | REPLICATE,BILINEAR,CUBIC,NONE |
| Smoothing Type | (2020,0080) | SCP specific |
| Requested Image Size | (2020,0030) | Unsigned short |
| Sequence | | |
| >Samples Per Pixel | (0028,0002) | 1 |
| >Photometric Interpretation | (0028,0004) | MONOCHROME1, MONOCHROME 2 |
| >Planar configuration | (0028,0006) | 1 |
| >Rows | (0028,0010) | Unsigned short |
| >Columns | (0028,0034) | Unsigned short |
| >Pixel Aspect Ratio | (0028,0034) | 1:1 |
| >Bits Allocated | (0028,0100) | 8 |
| >Bits Stored | (0028,0101) | 8 |
| >High Bit | (0028,0102) | 7 |
| >Pixel Representation | (0028,0103) | 000H(unsigned integer) |
| >Pixel Data | (7FE0,0010) | Other Byte String |

#### 2.2.3.3.1.2.1.4 Printer SOP Class Attributes

The UDI Print AE makes use of the following attributes and attributes values in this SOP class:

| Attribute Name | Tag | Supported Values |
|---|---|---|
| Printer Status | (2110,0010) | NORMAL,WARNING, FAILURE |
| Printer Status Info | (2110,0020) | SUPPLY EMPTY, SUPPLY LOW,RECEIVER FULL, |

| | | |
|---|---|---|
| | | FILM JAM |
| Printer Name | (2110,0030) | Long String |
| Manufacturer | (0008,0070) | Long String |
| Manufacturer Model Name | (0008,1090) | Long String |
| Device Serial Number | (0018,1000) | Long String |
| Software Versions | (0018,1020) | Long string(s) |

#### 2.2.3.4 Association Acceptance Policy

The Print AE does not accept Associations.

### 2.2.4 MPPS AE Specification

The UDI AE is used to transmit performed procedure step events, which are N-CREATE and N-SET, to a remote DICOM device. It performs the followings:

- Establishes a DICOM Association with a remote DICOM device.
- Sends DICOM MPPS Information to a remote DICOM device.

The UDI AE is a service class user (SCU) for Modality Performed Procedure Step.

#### 2.2.4.1 SOP Classes

The UDI MPPS AE provides standard conformance to the following DICOM SOP Classes as an SCU:

| SOP Class Name | SOP Class UID |
|---|---|
| **Modality Performed Procedure Step** | **1.2.840.10008.3.1.2.3.3** |

#### 2.2.4.2 Association Establishment Policies

##### 2.2.4.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

| | |
|---|---|
| **Application Context Name** | **1.2.840.10008.3.1.1.1** |

##### 2.2.4.2.2 Number of Associations

MPPS AE initiates one service association at any given time.

#### 2.2.4.2.3 Asynchronous Nature

The MPPS AE does not support asynchronous operations and will not perform asynchronous window negotiation.

#### 2.2.4.2.4 Implementation Identifying Information

The application uses the following implementation identifying information:

- Implementation Class UID: **2.16.124.113531.9**
- Implementation Version Name: **OE ver 1.0**

### 2.2.4.3 Association Initiation Policy

This section describes the conditions under which the MPPS AE will initiate an association.

#### 2.2.4.3.1 Activities – Send MPPS Messages

##### 2.2.4.3.1.1 Description and Sequencing of Activities

When a user of the UDI begins a new study, the UDI automatically issues a MPPS “In Progress” message to a queue designated for a remote DICOM PPS manager.

When a user of UDI ends a study, the UDI automatically issues a MPPS “Completed” (procedure completed) or “Discontinued” (procedure discontinued) message to queue designed for a remote DICOM PPS manager.

A configurable timer is used to send the queued messages to the remote DICOM PPS manager. Since the messages are queued, the remote PPS manager may receive both the “In Progress” and “Completed” at the same time.

All errors are logged in the UDI application.

##### 2.2.4.3.1.2 Proposed Presentation Contexts

The MPPS AE will propose Presentation Contexts as shown in the following table:

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Modality Performed Procedure Step | 1.2.840.10008.3.1.2.3.3 | Implicit Little Endian | 1.2.840.10008.1.2 | SCU | None |

#### 2.2.4.3.1.2.1 SOP Specific Conformance

MPPS AE involves the following two types of messages:

- MPPS N-Create operation
- MPPS N-Set operation

MPPS N-Create and N-Set messages are listed Annex 6.1.1.3 and 6.1.1.4.

## 2.3 Network Interfaces

### 2.3.1 Physical Network Interface

The UDI supports a single network interface. One of the following physical network interfaces will be available depending on installed hardware options:

- Ethernet 100BaseT
- Gigabit Ethernet

### 2.3.2 Additional Protocols

The UDI conforms to the System Management Profiles listed in the table below. All requested transactions for the listed profiles and actors are supported. Support for optional transactions are listed in the following table.

| Profile Name | Actor | Protocols Used | Optional Transactions | Security Support |
|---|---|---|---|---|
| Network Address | DHCP Client | DHCP | N/A | |

| | | | | |
|---|---|---|---|---|
| Management | DHCP Client | DNS | N/A | |

#### 2.3.2.1 DHCP

DHCP can be used to obtain TCP/IP network configuration information. The network parameters obtainable via DHCP are shown in the Table below. The Default Value column of the table shows the default used if the DHCP server does not provide a value. Values for network parameters set in the Service/Installation tool take precedence over values obtained from the DHCP server. Support for DHCP is pre-configured on the system. If DHCP is not in use, TCP/IP network configuration information must be manually configured via the service interface.

| DHCP Parameter | Default Vale |
|---|---|
| IP Address | None |
| Host Name | Requested machine name |
| List of NTP servers | Empty List |
| List of DNS servers | Empty List |
| Routers | Empty List |
| Static Routes | None |
| Domain name | None |
| Subnet Mask | Derived from IP Address (see service manual) |
| Broadcast address | Derived from IP Address (see service manual) |
| Default Router | None |
| Time Offset | Site configurable (from Time Zone) |
| MTU | Network Hardware Dependent |
| Auto-IP permission | No permission |

If the DHCP server refuses to renew a lease on the assigned IP address all active DICOM Associations will be aborted.

#### 2.3.2.2 DNS

DNS can be used for address resolution. If DHCP is not in use or the DHCP server does not return any DNS server addresses, the identity of a DNS server can be configured in the system via the service interface. If a DNS server is not in use, local mapping between hostname and IP address can be manually configured via the service interface.

### 2.3.3 IPv4 and IPv6 Support

This product only supports IPv4 connections.

## 2.4 Configuration

### 2.4.1 AE Title/Presentation Address Mapping

#### 2.4.1.1 Local AE Titles

The UDI uses the Worklist AE Title, Storage AE Title, MPPS AE Title, Print AE Title, and their TCP/IP Ports configured via the service page interface. The Field Service Personnel can configure the TCP Ports via the service page interface. No Default AE Title is provided. The AE Titles must be configured during installation.

#### 2.4.1.2 Remote AE Title/Presentation Address Mapping

The AE Title, host names and port numbers of remote applications are configured using the service page interface.

### 2.4.2 Parameters

A number of parameters related to DICOM communication can be configured using preference and configuration files. The following table shows those configuration parameters relevant to DICOM communication. See the UDI Service Manual for details on configuration capabilities.

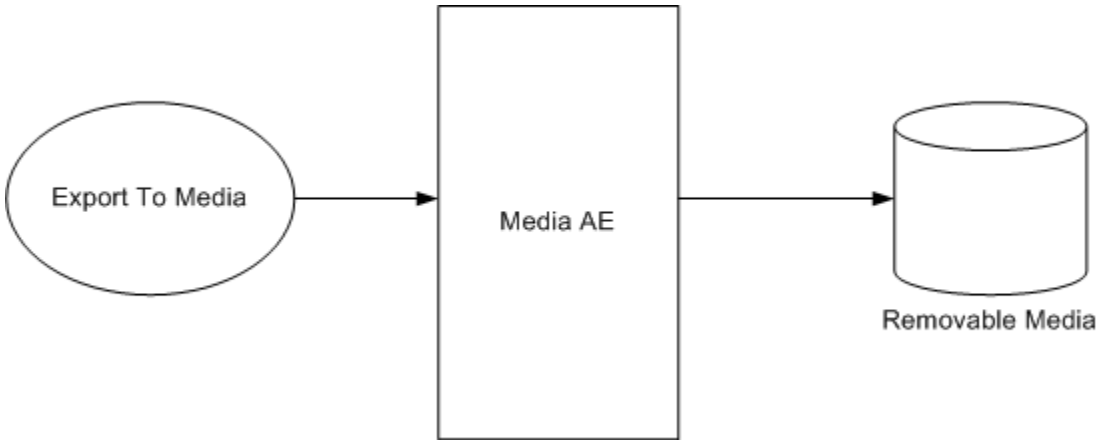
| Parameter | Configurable (Yes/No) | Default Value |
|---|---|---|
| **Max. Send and Receive PDU Size** (larger PDUs will never be sent, even if the receiver supports a larger Max PDU Receive Size. If the receiver supports a smaller Max PDU Receive Size then the Max PDU Send Size will be reduced accordingly for the duration of the Association. Max PDU Receive Size information is exchanged during DICOM Association Negotiation in the Maximum Length Sub-Item of the A-ASSOCIATION-RQ and A-ASSOCIATE-AC) | No | 65536 |
| **Association Timeout and Inactivity Timeout** (Time-out waiting for a response to an | No | 30 seconds |

| | | |
|---|---|---|
| Association Request or to a release request, Time-out waiting for completion of a TCP/IP connect request, Time-out for waiting for data between TCP/IP-packets) | | |
| **Worklist Auto Update Interval** (Automatic worklist update request) | Yes | 5 minutes |
| **Storage Retry Time** (How long before resending a failed storage job) | Yes | 1 minute |
| **Modality Performed Procedure Step Send Message Interval** (How long between sending MPPS messages) | Yes | 10 minutes |
| **Storage Commitment Enabled** (Request storage commitment after successful C-STORE response) | Yes | OFF |

# 3. Media Interchange

## 3.1 Implementation Model

### 3.1.1 Application Data Flow Diagram




**Dataflow of Media Application Entity**

### 3.1.2 Functional Definition of Media AE

The user of the UDI Application uses the GUI to select a study(s) – in the local UDI repository – that will be exported to the media. The user presses the button “Transfer” and the UDI Media AE component starts exporting the study to the media.

The media should not contain any existing File-Set. UDI Media AE acts as a FSC and always creates a new File-Set.

### 3.1.3 Sequencing of Real World Activity

When Media AE is activated and “Export to Media” activity is invoked, the user must ensure that a blank media is available. User can optionally erase a non-empty media prior to the media burning operation. The Media AE will log all error related to media errors or user operation errors.

### 3.1.4 File Meta Information for Implementation Class and Version

The implementation information written to the File Meta Header in each file is:

**DICOM Implementation Class and Version for Media Storage**

- Implementation Class UID: **2.16.124.113531.9**
- Implementation Version Name: **OE DA ver 1.0**

## 3.2 AE Specification

### 3.2.1 Media AE Specification

The Media AE provides standard conformance to the DICOM Interchange Option of the Media Storage Service Class. The Application Profiles and roles are listed below:

| Application Profiles Supported | Real World Activity | Role | SOP Class Option |
|---|---|---|---|
| STD-GEN-CD<br>STD-GEN-DVD | Export to Media (CD-R, CD-RW, DVD+/-R, DVD+/-RW) | FSC | Interchange |

#### 3.2.1.1 Real World Activities

##### 3.2.1.1.1 Activity – Export to Media

When Media AE first transfers study exams to a storage medium, their files are added to the storage medium in DICOM Part 10 format and a valid DICOMDIR is created and saved into the medium disk.

The Media AE is a File-Set Creator.

#### 3.2.1.2 Media Storage Application Profiles

The Media AE supports the following application profiles:

- STD-GEN-CD
- STD-GEN-DVD

##### 3.2.1.2.1 Options

The Media AE supports the SOP Classes and Transfer Syntaxes listed in the table below:

| Information Object Definition | SOP Class UID | Transfer Syntax Name | Transfer Syntax UID |
|---|---|---|---|
| Basic Directory | 1.2.840.10008.1.3.10 | Explicit Little Endian | 1.2.840.10008.1.2.1 |
| Digital X-Ray Image Storage – For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit Little Endian | 1.2.840.10008.1.2 |
| Digital X-ray Image Storage – For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Implicit Little Endian | 1.2.840.10008.1.2 |
| Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.1 | Implicit Little Endian | 1.2.840.10008.1.2 |

## 3.3 Augmented and Private Application Profiles

Media AE does not support any augmented and private application profiles.

## 3.4 Configuration

The Media AE requires user to pre-set and to maintain configuration parameters of local media storage application entities. The Media AE does not set the Application Entity Title in exported Part 10 (option in DICOM).

# 4. Support of Extended Character Sets

The UDI system only supports the default DICOM character repertoire.

# 5. Security

## 5.1 Security Profiles

The UDI does not support any specific security measures. It is the user's responsibility to use the system within a secured environment and to maintain a secured environment that includes at a minimum:

- Firewall or router protections to ensure that only approved external hosts have network access to the system
- Firewall or router protections to ensure that the system only has network access to approved external hosts and services.
- Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels (e.g. such as a Virtual Private Network (VPN))

## 5.2 Association Level Security

None supported.

## 5.3 Application Level Security

The service page user interface that is used to configure the DICOM service, is password controlled.

# 6. Annexes

## 6.1 IOD Contents

The UDI creates DX SOP instances and Grayscale Softcopy Presentation State SOP instances.

### 6.1.1 Created SOP Instances

The following tables use a number of abbreviations. The abbreviations used in the “Presence of Value” column are:

VNAP – Value Not Always Present (attribute sent zero length if no value is present)

ANAP – Attribute Not Always Present

ALWAYS – Always Present

EMPTY – Attribute is sent without a value

The abbreviations used in the “Source” column:

USER – the attribute value source is from User input
AUTO – the attribute value is generated automatically
MWL – the attribute value is from MWL
CONFIG – the attribute value source is a configurable parameter

#### 6.1.1.1 Image SOP Instance Attributes

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | “ORIGINAL\PRIMARY” | ALWAYS | AUTO |
| SOP Class UID | 0008,0016 | UI | “1.2.840.10008.5.1.4.1.1.1.1” or “1.2.840.10008.5.1.4.1.1.1.1.1” | ALWAYS | AUTO |
| SOP Instance UID | 0008,0018 | UI | A unique UID for every new instance of image | ALWAYS | AUTO |
| Study Date | 0008,0020 | DA | | ALWAYS | AUTO |
| Series Date | 0008,0021 | DA | | ALWAYS | AUTO |
| Acquisition Date | 0008,0022 | DA | | ALWAYS | AUTO |
| Content Date | 0008,0023 | DA | | ALWAYS | AUTO |
| Study Time | 0008,0030 | TM | | ALWAYS | AUTO |
| Series Time | 0008,0031 | TM | | ALWAYS | AUTO |
| Acquisition Time | 0008,0032 | TM | | ALWAYS | AUTO |
| Content Time | 0008,0033 | TM | | ALWAYS | AUTO |
| Accession Number | 0008,0050 | SH | | VNAP | USER or MWL |
| Modality | 0008,0060 | CS | “DX” | ALWAYS | AUTO |
| Presentation Intent Type | 0008,0068 | CS | “FOR PRESENTATION” or “FOR PROCESSING” | ALWAYS | AUTO |
| Manufacturer | 0008,0070 | LO | “MERIDIAN MEDICAL” | ALWAYS | AUTO |
| Institution Name | 0008,0080 | LO | | ALWAYS | CONFIG |
| Institution Address | 0008,0081 | LO | | ALWAYS | CONFIG |
| Referring Physician’s Name | 0008,0090 | PN | | VNAP | USER or MWL |
| Station Name | 0008,1010 | SH | | ALWAYS | CONFIG |

| | | | | | |
|---|---|---|---|---|---|
| Study Description | 0008,1030 | LO | | ANAP | USER or MWL |
| Series Description | 0008,103E | LO | | ALWAYS | USER or MWL |
| Institutional Department Name | 0008,1040 | LO | | ALWAYS | CONFIG |
| Performing Physician's Name | 0008,1050 | PN | | ANAP | USER |
| Operator's Name | 0008,1070 | PN | | ANAP | AUTO |
| Manufacturer's Model Name | 0008,1090 | LO | | ALWAYS | CONFIG |
| Rerferenced Performed Procedure Step Sequence | 0008,1111 | SQ | | ALWAYS | AUTO |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO |
| Source Image Reference | 0008,2112 | SQ | Only set for "FOR PRESENTATION" image and the referenced image is the "FOR PROCESSING" image (raw image) | ANAP | AUTO |
| Anatomic Region Sequence | 0008,2218 | SQ | | ALWAYS | AUTO |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Patient's Name | 0010,0010 | PN | | VNAP | USER or MWL |
| Patient ID | 0010,0020 | LO | | VNAP | USER or MWL |
| Patient's Birth | 0010,0030 | DA | | VNAP | USER or |

| | | | | | |
|---|---|---|---|---|---|
| Date | | | | | MWL |
| Patient's Sex | 0010,0040 | CS | | VNAP | USER or MWL |
| KVP | 0018,0060 | DS | | ALWAYS | AUTO |
| Device Serial Number | 0018,1000 | LO | | ALWAYS | AUTO |
| Software Versions | 0018,1020 | LO | | ALWAYS | AUTO |
| Protocol Name | 0018,1030 | LO | | ALWAYS | AUTO |
| Distance Source to Detector | 0018,1110 | DS | | ALWAYS | AUTO |
| Exposure Time | 0018,1150 | IS | | ALWAYS | AUTO |
| X-Ray Tube Current | 0018,1151 | IS | | ALWAYS | AUTO |
| Exposure | 0018,1152 | IS | | ALWAYS | AUTO |
| Imager Pixel Spacing | 0018,1164 | DS | | ALWAYS | AUTO |
| Focal Spot | 0018,1190 | DS | | ALWAYS | AUTO |
| Positioner Type | 0018,1508 | CS | Length=0 | ALWAYS | AUTO |
| View Position | 0018,5101 | CS | | ALWAYS | AUTO |
| Projection Eponymous Name Code Sequence | 0018,5104 | SQ | | ALWAYS | AUTO |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Detector Type | 0018,7004 | CS | "DIRECT" | ALWAYS | AUTO |
| Detector Configuration | 0018,7005 | CS | | ALWAYS | AUTO |
| Detector Description | 0018,7006 | LT | | ALWAYS | AUTO |
| Detector Mode | 0018,7008 | LT | | ALWAYS | AUTO |
| Detector ID | 0018,702A | SH | | ALWAYS | AUTO |
| Detector Manufacturer's Name | 0018,702B | LO | | ALWAYS | AUTO |
| Exposure Control Mode | 0018,7060 | CS | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| Exposure Control Model Description | 0018,7062 | LT | | ALWAYS | AUTO |
| Phototimer Setting | 0018,7065 | DS | | ALWAYS | AUTO |
| Study Instance UID | 0020,000D | UI | A UID is automatically generated for every instance | ALWAYS | MWL or AUTO |
| Series Instance UID | 0020,000E | UI | A UID is automatically generated for every instance | ALWAYS | AUTO |
| Study ID | 0020,0010 | SH | | ALWAYS | AUTO |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO |
| Patient Orientation | 0020,0020 | CS | | ALWAYS | AUTO |
| Image Laterality | 0020,0062 | CS | | ALWAYS | AUTO |
| Samples Per Pixel | 0028,0002 | US | 1 | ALWAYS | AUTO |
| Photometric Interpretation | 0028,0004 | CS | “MONOCHROME1” | ALWAYS | AUTO |
| Rows | 0028,0010 | US | | ALWAYS | AUTO |
| Columns | 0028,0011 | US | | ALWAYS | AUTO |
| Pixel Aspect Ratio | 0028,0034 | IS | “1\1” | ALWAYS | AUTO |
| Bits Allocated | 0028,0100 | US | | ALWAYS | AUTO |
| Bits Stored | 0028,0101 | US | | ALWAYS | AUTO |
| High Bit | 0028,0102 | US | | ALWAYS | AUTO |
| Pixel Representation | 0028,0103 | US | | ALWAYS | AUTO |
| Burned In Annotation | 0028,0301 | CS | “NO” | ALWAYS | AUTO |
| Pixel Intensity Relationship | 0028,1040 | CS | “LIN”or”LOG” | ALWAYS | AUTO |
| Pixel Intensity Relationship Sign | 0028,1041 | SS | | ALWAYS | AUTO |
| Rescale Intercept | 0028,1052 | DS | 0 | ALWAYS | AUTO |
| Rescale Slope | 0028,1053 | DS | 1 | ALWAYS | AUTO |
| Rescale Type | 0028,1054 | LO | “US” | ALWAYS | AUTO |
| Performed | 0040,0244 | DA | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| Procedure Step Start Date | | | | | |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ALWAYS | AUTO |
| Performed Procedure Step ID | 0040,0253 | SH | | ANAP | AUTO |
| Performed Procedure Step Description | 0040,0254 | LO | | ALWAYS | AUTO |
| Organ Dose | 0040,0316 | DS | | ALWAYS | AUTO |
| Organ Exposed | 0040,0318 | CS | | ALWAYS | AUTO |
| Acquisition Context Sequence | 0040,0555 | SQ | Empty Sequence | ALWAYS | AUTO |
| Entrance Dose in mGy | 0040,8302 | DS | | ALWAYS | AUTO |
| View Code Sequence | 0054,0220 | SQ | | ALWAYS | AUTO |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| >View Modifier Code Sequence | 0054,0222 | SQ | | ALWAYS | AUTO |
| >>Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >>Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >>Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Patient Orientation Code Sequence | 0054,0410 | SQ | | ALWAYS | AUTO |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Coding | 0008,0102 | SH | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| Scheme Designator | | | | | |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Presentation LUT Shape | 2050,0020 | CS | “IDENTITY” or “INVERSE” | ALWAYS | AUTO |
| Pixel Data | 7FE0,0010 | O W | | ALWAYS | AUTO |

#### 6.1.1.2 Grayscale Softcopy Presentation State SOP Instance Attributes

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|---|---|---|---|---|
| Image Type | 0008,0008 | CS | “ORIGINAL\PRIMARY” | ALWAYS | AUTO |
| SOP Class UID | 0008,0016 | UI | “1.2.840.10008.5.1.4.1.1.11.1” | ALWAYS | AUTO |
| SOP Instance UID | 0008,0018 | UI | A unique UID for every new instance of image | ALWAYS | AUTO |
| Study Date | 0008,0020 | DA | | ALWAYS | AUTO |
| Series Date | 0008,0021 | DA | | ALWAYS | AUTO |
| Study Time | 0008,0030 | TM | | ALWAYS | AUTO |
| Series Time | 0008,0031 | TM | | ALWAYS | AUTO |
| Accession Number | 0008,0050 | SH | | VNAP | USER or MWL |
| Modality | 0008,0060 | CS | “DX” | ALWAYS | AUTO |
| Referring Physician’s Name | 0008,0090 | PN | | VNAP | USER or MWL |
| Study Description | 0008,1030 | LO | | ANAP | USER or MWL |
| Series Description | 0008,103E | LO | | ALWAYS | USER or MWL |
| Name of Physician(s) Reading Study | 0008,1060 | PN | | ANAP | USER |
| Operator’s Name | 0008,1070 | PN | | ANAP | AUTO |
| Referenced Series Sequence | 0008,1115 | SQ | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| >>Referenced Image Sequence | 0008,1140 | UI | | ALWAYS | AUTO |
| >>Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO |
| >>Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO |
| >Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO |
| Patient's Name | 0010,0010 | PN | | VNAP | USER or MWL |
| Patient ID | 0010,0020 | LO | | VNAP | USER or MWL |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | USER or MWL |
| Patient's Sex | 0010,0040 | CS | | VNAP | USER or MWL |
| Additional Patient's History | 0010,21B0 | LT | | ALWAYS | MWL |
| Device Serial Number | 0018,1000 | LO | | ALWAYS | AUTO |
| Study Instance UID | 0020,000D | UI | A UID is automatically generated for every instance | ALWAYS | MWL or AUTO |
| Series Instance UID | 0020,000E | UI | A UID is automatically generated for every instance | ALWAYS | AUTO |
| Study ID | 0020,0010 | SH | | ALWAYS | AUTO |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO |
| Rescale Intercept | 0028,1052 | DS | 0 | ALWAYS | AUTO |
| Rescale Slope | 0028,1053 | DS | 1 | ALWAYS | AUTO |
| Rescale Type | 0028,1054 | LO | "US" | ALWAYS | AUTO |
| Softcopy VOI LUT Sequence | 0028,3110 | SQ | | ALWAYS | AUTO |
| >Window Center | 0028,1050 | DS | | ALWAYS | AUTO |
| >Window Width | 0028,1051 | DS | | ALWAYS | AUTO |
| Graphic Annotation | 0070,0001 | SQ | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| Sequence | | | | | |
| >Graphic Layer | 0070,0002 | CS | | ALWAYS | AUTO |
| Image Horizontal Flip | 0070,0041 | CS | | ALWAYS | AUTO |
| Image Rotation | 0070,0042 | US | | ALWAYS | AUTO |
| Display Area Selection Sequence | 0070,005A | SQ | | ALWAYS | AUTO |
| >Displayed Area Top Left Hand Corner | 0070,0052 | SL | | ALWAYS | AUTO |
| >Displayed Area Bottom Right Hand Corner | 0070,0053 | SL | | ALWAYS | AUTO |
| >Presentation Size Mode | 0070,0100 | CS | | ALWAYS | AUTO |
| >Presentation Pixel Spacing | 0070,0101 | CS | | ALWAYS | AUTO |
| >Presentation Pixel Magnification Ratio | 0070,0103 | FL | | ALWAYS | AUTO |
| Graphic Layer Sequence | 0070,0060 | SQ | | ALWAYS | AUTO |
| >Graphic Layer | 0070,0002 | CS | | ALWAYS | AUTO |
| >Graphic Layer Order | 0070,0062 | IS | | ALWAYS | AUTO |
| Presentation Creation Date | 0070,0082 | DA | | ALWAYS | AUTO |
| Presentation Creation Time | 0070,0083 | TM | | ALWAYS | AUTO |
| Presentation LUT Shape | 2050,0020 | CS | “IDENTITY” or “INVERSE” | ALWAYS | AUTO |

#### 6.1.1.3 MPPS N-Create SOP Instance Attributes

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|---|---|---|---|---|
| Modality | 0008,0060 | CS | “DX” | ALWAYS | AUTO |
| Procedure Code Sequence | 0008,1032 | SQ | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Referenced Patient Sequence | 0008,1150 | SQ | | ALWAYS | AUTO |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO |
| Patient's Name | 0010,0010 | PN | | VNAP | USER or MWL |
| Patient ID | 0010,0020 | LO | | VNAP | USER or MWL |
| Patient's Birth Date | 0010,0030 | DA | | VNAP | USER or MWL |
| Patient's Sex | 0010,0040 | CS | | VNAP | USER or MWL |
| Study ID | 0020,0010 | SH | | ALWAYS | AUTO |
| Scheduled Step Attribute Sequence | 0040,0270 | SQ | | ALWAYS | AUTO |
| >Accession Number | 0008,0050 | SH | | ALWAYS | AUTO |
| >Referenced Study Sequence | 0008,1110 | SQ | | ALWAYS | AUTO |
| >>Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO |
| >>Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO |
| >Study Instance UID | 0020,000D | UI | | ALWAYS | AUTO |
| >Scheduled Procedure Step Description | 0040,0007 | LO | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| >Scheduled Protocol Code Sequence | 0040,0008 | SQ | | ALWAYS | AUTO |
| >>Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >>Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >>Coding Scheme Version | 0008,0103 | SH | | ALWAYS | AUTO |
| >>Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| >Scheduled Procedure Step ID | 0040,0009 | SH | | ALWAYS | AUTO |
| >Requested Procedure ID | 0040,1001 | SH | | ALWAYS | AUTO |
| Performed Station AE Title | 0040,0241 | AE | | ALWAYS | AUTO |
| Performed Station Name | 0040,0242 | SH | | ALWAYS | AUTO |
| Performed Location | 0040,0243 | SH | | ALWAYS | AUTO |
| Performed Procedure Step Start Date | 0040,0244 | DA | | ALWAYS | AUTO |
| Performed Procedure Step Start Time | 0040,0245 | TM | | ALWAYS | AUTO |
| Performed Procedure Step End Date | 0040,0250 | DA | | ALWAYS | AUTO |
| Performed Procedure Step End Time | 0040,0251 | TM | | ALWAYS | AUTO |
| Performed Procedure Step Status | 0040,0252 | CS | “IN PROGRESS” | ALWAYS | AUTO |
| Performed Procedure Step ID | 0040,0253 | SH | | ALWAYS | AUTO |
| Performed | 0040,0254 | LO | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| Procedure Step Description | | | | | |
| Performed Procedure Step Type Description | 0040,0255 | LO | | ALWAYS | AUTO |
| Performed Action Item Code Sequence | 0040,0260 | SQ | | ALWAYS | AUTO |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >Coding Scheme Version | 0008,0103 | SH | | ALWAYS | AUTO |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Performed Series Sequence | 0040,0340 | SQ | | ALWAYS | AUTO |
| >Retrieve AE Title | 0008,0054 | AE | | ALWAYS | AUTO |
| >Series Description | 0008,103E | LO | | ALWAYS | AUTO |
| >Performing Physician's Name | 0008,1050 | PN | | ALWAYS | AUTO |
| >Operator's Name | 0008,1070 | PN | | ALWAYS | AUTO |
| >Reference Image Sequence | 0008,1140 | SQ | | ALWAYS | AUTO |
| >>Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO |
| >>Reference SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO |
| >Protocol Name | 0018,1030 | LO | | ALWAYS | AUTO |
| >Series | 000,000E | UI | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| Instance UID | | | | | |
| Procedure Code Sequence | 0008,1032 | SQ | | ALWAYS | AUTO |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Code Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >Code Scheme Version | 0008,0103 | SH | | ALWAYS | AUTO |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Performed Procedure Step End Date | 0040,0250 | DA | | ALWAYS | AUTO |
| Performed Procedure Step End Time | 0040,0251 | TM | | ALWAYS | AUTO |
| Performed Procedure Step Status | 0040,0252 | CS | “COMPLETED” | ALWAYS | AUTO |
| Performed Procedure Step Description | 0040,0254 | LO | | ALWAYS | AUTO |
| Performed Procedure Type Description | 0040,0255 | LO | | ALWAYS | AUTO |
| Performed Protocol Code Sequence | 0040,0260 | SQ | | ALWAYS | AUTO |
| >Code Value | 0008,0100 | SH | | ALWAYS | AUTO |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | AUTO |
| >Coding Scheme Version | 0008,0103 | SH | | ALWAYS | AUTO |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | AUTO |
| Performed Series | 0040,0340 | SQ | | ALWAYS | AUTO |

| | | | | | |
|---|---|---|---|---|---|
| Sequence | | | | | |
| >Performing Physician's Name | 0008,1050 | PN | | ALWAYS | AUTO |
| >Protocol Name | 0018,1030 | UI | | ALWAYS | AUTO |
| >Operator's Name | 0008,1070 | PN | | ALWAYS | AUTO |
| >Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO |
| >Retrieve AE Title | 0008,0054 | AE | | ALWAYS | AUTO |
| >Reference Image Sequence | 0008,1140 | SQ | | ALWAYS | AUTO |
| >>Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO |
| >>Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO |

### 6.1.2 Usage of Attributes From Received IOD's

The UDI doesn't receive IOD from external source.

### 6.1.3 Attribute Mapping

The UDI does not perform any attribute mapping.

### 6.1.4 Coerced/Modified Fields

The UDI doesn't receive IOD from external source. It creates and sends out IOD.

## 6.2 Data Dictionary of Private Attributes

No private attributes are defined.

## 6.3 Coded terminology and Templates

Code Meaning values are not interpreted or displayed by the application.

## 6.4 Grayscale Image Consistency

The UDI does not support the Grayscale Standard Display Function

## 6.5 Standard Extended/Specialized/Private SOP Classes

The UDI does not claim conformance to any Extended, Specialized or Private SOP Classes.

## 6.6 Private Transfer Syntaxes

The UDI does not employ any Private Transfer Syntaxes.